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APPLICATION NO.	FILI	NG DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.	
10/668,304	10/668,304 09/24/2003		Hidetoshi Watanabe	116790	2400	
25944	7590	03/03/2005		EXAMINER		
OLIFF & F		E, PLC	MRUK, GEO	MRUK, GEOFFREY S		
P.O. BOX 19928 ALEXANDRIA, VA 22320		22320		ART UNIT	PAPER NUMBER	
	,			2853		
				DATE MAILED: 03/03/2005	DATE MAILED: 03/03/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)	
	10/668,304	WATANABE ET AL.	٠,
Office Action Summary	Examiner	Art Unit	
	Geoffrey Mruk	2853	
The MAILING DATE of this communication app Period for Reply	pears on the cover sheet with the c	orrespondence address	
A SHORTENED STATUTORY PERIOD FOR REPL' THE MAILING DATE OF THIS COMMUNICATION.  - Extensions of time may be available under the provisions of 37 CFR 1.1 after SIX (6) MONTHS from the mailing date of this communication.  - If the period for reply specified above is less than thirty (30) days, a repl - If NO period for reply is specified above, the maximum statutory period or - Failure to reply within the set or extended period for reply will, by statute Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	36(a). In no event, however, may a reply be time y within the statutory minimum of thirty (30) day will apply and will expire SIX (6) MONTHS from the cause the application to become ABANDONE	nely filed s will be considered timely. the mailing date of this communication. D (35 U.S.C. § 133).	
Status			
1) Responsive to communication(s) filed on 24 S	eptember 2003.		
	action is non-final.		
3) Since this application is in condition for alloware closed in accordance with the practice under E			
Disposition of Claims			
4)  Claim(s) 1-20 is/are pending in the application 4a) Of the above claim(s) is/are withdray 5)  Claim(s) is/are allowed. 6)  Claim(s) 1-20 is/are rejected. 7)  Claim(s) is/are objected to. 8)  Claim(s) are subject to restriction and/o	wn from consideration.		
Application Papers		-	
9) The specification is objected to by the Examine 10) The drawing(s) filed on 24 September 2003 is/a Applicant may not request that any objection to the Replacement drawing sheet(s) including the correct 11) The oath or declaration is objected to by the Ex	are: a) $\square$ accepted or b) $\boxtimes$ objec drawing(s) be held in abeyance. See tion is required if the drawing(s) is obj	e 37 CFR 1.85(a). jected to. See 37 CFR 1.121(d).	
Priority under 35 U.S.C. § 119			
12) Acknowledgment is made of a claim for foreign a) All b) Some * c) None of:  1. Certified copies of the priority document 2. Certified copies of the priority document 3. Copies of the certified copies of the priority document application from the International Bureau * See the attached detailed Office action for a list	s have been received. s have been received in Applicati rity documents have been receive u (PCT Rule 17.2(a)).	on No ed in this National Stage	
Attachment(s)  1) Notice of References Cited (RTO 802)	A) 🗖 Inter-in 0	(PTO 412)	
<ol> <li>Notice of References Cited (PTO-892)</li> <li>Notice of Draftsperson's Patent Drawing Review (PTO-948)</li> <li>Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>9 October 2003</u>.</li> </ol>	4) Interview Summary Paper No(s)/Mail Da 5) Notice of Informal P 6) Other:		

### **DETAILED ACTION**

## **Drawings**

Figures 1A and 1B should be designated by a legend such as -- Prior Art-because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

# Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10-16, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa (US 6,276,781 B1).

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With respect to claim 1, Hasegawa discloses an inkjet head (Figure 1), comprising:

- a cavity plate (Figure 3, element 106) having a plurality of pressure chambers (Figure 3, element 103) arranged in matrix (Column 2, lines 15-18);
- a piezoelectric sheet (Figure 3, element 112) laminated on said cavity
  plate;
- a plurality of driving electrodes (Figure 3, element 113) formed on said
   piezoelectric sheet at positions corresponding to said pressure chambers;
- a plurality of first contact lands (Figure 2B, element 115) extending from respective ones of said driving electrodes, each of said first contact lands being located in a vicinity of corresponding one of said driving electrodes (Column 5, lines 52-65); and
- a power supply board (Figure 2B, element 107) having a plurality of second contact lands (Figure 2B, element 125) formed at positions corresponding to said first contact lands (Figure 2B, elements 115, 125), said second contact lands being connected with respective ones of said first contact lands for power supply (Column 9, lines 44-64).

With respect to claim 2, Hasegawa discloses the first contact lands (Figure 2B, element 115) are formed so as to protrude from said piezoelectric sheet (Interface between elements 113 and 115 in Figure 2B).

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With respect to claim 3, Hasegawa discloses the second contact lands (Figure 2B, element 125) are formed so as to protrude (Column 5, lines 55-67; Column 6, lines1-13) from said power supply board (Figure 2B, element 107).

With respect to claim 4, Hasegawa discloses the first contact lands (Figure 2B, element 115) are formed in more than two tiers (Interface between elements 113 and 115 of Figure 2B; Interface between elements 115 and 125 of Figure 2B).

With respect to claim 5, Hasegawa discloses the first contact lands (Figure 2B, element 115) includes a first level portion (Interface between elements 113 and 115 of Figure 2B) higher than said driving electrode (Figure 2B, element 115) and a second level portion (Interface between elements 115 and 125 of Figure 2B) higher than said first level portion, said first level portion being formed between said second level portion and said driving electrode.

With respect to claim 6, Hasegawa discloses the second level portion (Interface between elements 115 and 125 of Figure 2B) is formed out of areas of said piezoelectric sheet (Figure 2B, elements 112, 113) defined directly above said pressure chambers (Figure 2A, element 103).

With respect to claim 10, Hasegawa discloses the piezoelectric sheet (Figure 2B, element 112) has at least one positioning mark (Figure 2B, element 113 geometry) that assists in positioning of said power supply board (Figure 2B, element 107) on said piezoelectric sheet such that said plurality of first contact lands (Figure 2B, element 115) make contact with said plurality of second contact lands (Figure 2B, element 125; Column 7, lines 6-35).

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With respect to claim 11, Hasegawa discloses the power supply board (Figure 2B, element 107) has at least one positioning mark (Figure 2B, element 124) that assists in positioning of said power supply board on said piezoelectric sheet (Figure 2B, element 112) such that said plurality of first contact lands (Figure 2B, element 115) make contact with said plurality of second contact lands (Figure 2B, element 125; ... Column 7, lines 6-35).

With respect to claim 12, Hasegawa discloses an inkjet head (Figure 1), comprising:

- a body having a plurality of pressure chambers (Figure 3, element 103)
   arranged in matrix (Column 2, lines 15-18);
- a piezoelectric sheet (Figure 33, element 112) attached on said body;
- a plurality of driving electrodes (Figure 3, element 113) formed on said piezoelectric sheet at positions corresponding to said pressure chambers;
   and
- a plurality of first contact lands (Figure 2B, element 115) extending from
  respective ones of said driving electrodes, each of said first contact lands
  being located in a vicinity of corresponding one of said driving electrodes
  (Interface between elements 113 and 115 in Figure 2B), said first contact
  lands being to be connected with respective ones of second contact lands
  (Interface between elements 115 and 125 in Figure 2B) of a printed board
  for power supply (Column1, lines 37-62).

With respect to claim 13, Hasegawa discloses the first contact lands (Figure 2B, element 115) are formed so as to protrude from said piezoelectric sheet (Interface between elements 113 and 115 in Figure 2B).

With respect to claim 14, Hasegawa discloses the first contact land (Figure 2B, element 115) is formed in more than two tiers (Interface between elements 113 and 115 of Figure 2B; Interface between elements 115 and 125 of Figure 2B).

With respect to claim 15, Hasegawa discloses the first contact lands (Figure 2B, element 115) includes a first level portion (Interface between elements 113 and 115 of Figure 2B) higher than said driving electrode (Figure 2B, element 113) and a second level portion (Interface between elements 115 and 125 of Figure 2B) higher than said first level portion, said first level portion being formed between said second level portion and said driving electrode.

With respect to claim 16, Hasegawa discloses the first contact lands (Figure 2B, element 115) are formed out of areas of said piezoelectric sheet (Interface between elements 113 and 115 in Figure 2B) defined right above said pressure chambers (Figure 2A, element 103).

With respect to claim 20, Hasegawa discloses piezoelectric sheet (Figure 2B, element 112) has at least one positioning mark (Figure 2B, element 113 geometry) that assists in positioning of the printed board (Figure 2B, element 107) on said piezoelectric sheet such that said first contact lands come into contact with the second contact lands (Figure 2B, element 125; Column 7, lines 6-35).

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## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 7-9 and 17-19 are rejected under 35 U.S.C. 103(a) as being obvious over Hasegawa (US 6,276,781 B1) in view of Sakaida et al. (US 6,808,254 B2).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned

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by the same person or subject to an obligation of assignment to the same person. See

MPEP § 706.02(I)(1) and § 706.02(I)(2).

With respect to claims 7-9 and 17-19, Hasegawa discloses the claimed invention with the exception of the driving electrodes have a substantially rhombus form, having a pair of acute angle corners and a pair of obtuse angle corners, where the driving electrodes are arranged such that the acute angle corners of one driving electrode is located between the acute angle corners of other driving electrodes adjacent to one driving electrode.

Sakaida discloses the drive electrodes (Figure 9, element 36) are shaped similar to, but slightly smaller than, the projected shape of the parallelogram-shaped ink pressure chambers (Figure 9, element 17c), thus forming the acute and obtuse angles. Also, Sakaida discloses the driving electrodes (Figure 7, element 36) are arranged such that the acute angle corners of one driving electrode is located between the acute angle corners of other driving electrodes adjacent to one driving electrode.

At the time of the invention, it would have been obvious for a person of ordinary skill in the art to use the parallelogram shaped electrodes of Sakaida in the printer head of Hasegawa. The motivation for doing so would have been for the benefit of large and efficient pressure fluctuation in the pressure chambers of Hasegawa.

### Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Koga et al. discloses writing electrodes that are in the shape of a

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parallelogram (claim 2) for the prevention of image defects due to linear strains (column 19, lines 53-65). However, the writing electrodes are not disclosed for the use in a piezoelectric actuator of an inkjet printer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GSM 2/23/2005

> MANISH S. SHAH PRIMARY EXAMINER

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